

THERMOPHOTOVOLTAIC POWER SUPPLY

ABSTRACT OF THE DISCLOSURE

A microthermophotovoltaic (micro-TPV) system is a novel micro power device. The system fully utilizes the high surface-to-volume ratio of a microcombustor, and is able to deliver and electrical power output of 0.5-10 W in a package of the order of centimeters. The system comprises mainly a combustor-emitter, a filter, a photovoltaic (PV) cell array, and cooling fins. The combustor-emitter functions to convert chemical energy into radiative heat energy. The filter is able to recycle a large part of the unusable energy that cannot be converted into electricity by the PV cell array. The PV cell array is used to convert radiative heat energy into electricity. The system has no moving parts. Its fabrication and assembly are relatively easy. As a result, it can be readily used as a power source of micro mechanical devices and portable devices, in which convenience and low cost reliability and ease of maintenance are the key factors of consideration.

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